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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/563,677

06/05/2006

Christine Terreau

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1745

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EXAMINER

MOWLA, GOLAM

ART UNIT

PAPER NUMBER

1795

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/563,677	<b>Applicant(s)</b> TERREAU ET AL.	
	<b>Examiner</b> GOLAM MOWLA	<b>Art Unit</b> 1795	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 January 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2-4,6,8,12-17 and 31-38 is/are pending in the application.
- 4a) Of the above claim(s) 18-27 and 30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-4,6,8,12-17,31-34 and 36-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> .                                  | 6) <input type="checkbox"/> Other: _____                          |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date: 06/05/2006, 04/27/2009, 06/29/2009 and 09/15/2009.

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of Group I in the reply filed on 01/19/2010 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 37 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The added limitation "wherein said first and second liquid diorganopolysiloxanes, silicone resins, cross-linking agents, and hydrosilylation catalysts may be the same or different from each other, respectively" is not supported by the original disclosure as filed.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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5. Claims 6, 8, 14-17, 32-33 and 37 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 37 is indefinite because it recites the limitation "wherein said first and second liquid diorganopolysiloxanes, silicone resins, cross-linking agents, and hydrosilylation catalysts may be the same or different from each other, respectively."

The first and second cross-linking agents can not be the same because the ratio of the number of moles of silicon-bonded hydrogen to the total number of moles of silicon-bonded alkenyl groups is not the same.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 2-4, 6, 8, 12-17, 31-34 and 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiotsuka et al. (US 6175075) in view of Stein (US 5569689).

Regarding claims 36 and 12, Shiotsuka discloses a solar cell module (see fig. 1b and 12:33-54) comprising a rigid or flexible superstrate (protective film 123) (18:1-49), a silicone adhesive (surface side filler resin 122 which comprises silicone) (15:55-16:10), and one or more solar cells (photovoltaic element string 121 having a plurality of photovoltaic elements) (9:46-47) disposed on said adhesive (122).

Shiotsuka further teaches that the silicone adhesive (122) is utilized in order provide adhesion between the superstrate (123) and the solar cell (121). However, the reference is silent as to whether the silicone adhesive (122) has a viscosity of from 100-2000 mPa.s at 25°C and comprises a composition that is formed from: (Ai) 100 parts by weight of a first liquid diorganopolysiloxane having at least two Si-alkenyl groups per molecule, (Bi) 20 to 40 parts by weight of a first silicone resin containing at least two alkenyl groups, (Ci) a first cross-linking agent in the form of a polyorganosiloxane having at least two silicon-bonded hydrogen atoms per molecule, in an amount such that the ratio of the number of moles of silicon-bonded hydrogen to the total number of moles of silicon-bonded alkenyl groups in component (Ai) is <1:1, and (Di) a first hydrosilylation catalyst wherein the amount of metal in said hydrosilylation catalyst is from 0.01 to 500 parts by weight per 1,000,000 parts by weight of component (Ai).

Stein teaches a silicone adhesive composition having improved adhesivity (1:22-33 and 2:23-33). Stein further teaches that a composition that is formed from: (Ai) 100 parts by weight of a liquid diorganopolysiloxane having at least two Si-alkenyl groups per molecule (2:55-60), (Bi) up to 100 parts by weight of a silicone resin containing at least two alkenyl groups (3:4-14), (Ci) a cross-linking agent in the form of a

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polyorganosiloxane having at least two silicon-bonded hydrogen atoms per molecule, in an amount such that the ratio of the number of moles of silicon-bonded hydrogen to the total number of moles of silicon-bonded alkenyl groups in component (Ai) is from 0.4:1 to 2:1 (3:15-45), and (Di) a hydrosilylation catalyst wherein the amount of metal in said hydrosilylation catalyst is from 0.01 to 500 parts by weight per 1,000,000 parts by weight of component (Ai) (3:56-4:10).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the silicone adhesive composition of Stein in the solar cell module of Shiotsuka in order to allow for sufficient adhesion between the superstrate (123) and the solar cell (121).

The claimed ranges of the first silicone resin and the ratio of the number of moles of silicon-bonded hydrogen to the total number of moles of silicon-bonded alkenyl groups in component (Ai) overlap or lies within the disclosed range. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists (MPEP § 2144.05, In re Wertheim). In an alternative, it would have been obvious to one of ordinary skill in the art at the time of the invention to have performed routine experimentation to determine the optimum weight fraction of the first silicone resin, and the ratio of the number of moles of silicon-bonded hydrogen to the total number of moles of silicon-bonded alkenyl groups in component (Ai) by routine experimentation such that the adhesivity of the silicone adhesive composition is optimized. In the case where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine

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experimentation (MPEP § 2144.05 IIA, *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)).

Since the silicone adhesive composition of Shiotsuka in view of Stein as modified has the same composition as the instant claim, the silicone adhesive composition of Shiotsuka in view of Stein as modified must inherently have a viscosity of from 100-2000 mPa.s at 25°C. If different results are achieved, it must be due to the limitations that are not currently claimed. It is also noted that claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable (*In re Best*, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977)) (MPEP §2112).

Regarding claims 2-4 and 31, the reference further discloses that said one or more solar cells (121) is either a wafer or a thin film made from a amorphous silicon, polycrystalline silicon, gallium arsenide, copper indium diselenide or cadmium telluride (13:45-57).

Regarding claims 37 and 6, Shiotsuka further discloses a silicone encapsulant (back side filler resin 124) (19:1-34) disposed on said one ore more solar cells (121). Shiotsuka further teaches that the silicone encapsulant (124) is utilized in order provide adhesion between the substrate (126) and the solar cell (121). However, the reference is silent as to whether the silicone encapsulant (124) comprises a liquid silicone encapsulant composition that is formed from: (A) 100 parts by weight of a second liquid diorganopolysiloxane having at least two Si-alkenyl groups per molecule, (B) 20 to 40 parts by weight of a second silicone resin containing at least two alkenyl groups, (C) a



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second cross-linking agent in the form of a polyorganosiloxane having at least two silicon-bonded hydrogen atoms per molecule, in an amount such that the ratio of the number of moles of silicon-bonded hydrogen to the total number of moles of silicon-bonded alkenyl groups in component (A) is  $> 1:1$  to  $5:1$ , and (D) a second hydrosilylation catalyst wherein the amount of metal in said hydrosilylation catalyst is from 0.01 to 500 parts by weight per 1,000,000 parts by weight of component (A).

Stein teaches a silicone encapsulant composition having improved adhesivity (1:22-33 and 2:23-33). Stein further teaches that a composition that is formed from: (A) 100 parts by weight of a liquid diorganopolysiloxane having at least two Si-alkenyl groups per molecule (2:55-60), (Bi) up to 100 parts by weight of a silicone resin containing at least two alkenyl groups (3:4-14), (Ci) a cross-linking agent in the form of a polyorganosiloxane having at least two silicon-bonded hydrogen atoms per molecule, in an amount such that the ratio of the number of moles of silicon-bonded hydrogen to the total number of moles of silicon-bonded alkenyl groups in component (Ai) is from  $0.4:1$  to  $2:1$  (3:15-45), and (Di) a hydrosilylation catalyst wherein the amount of metal in said hydrosilylation catalyst is from 0.01 to 500 parts by weight per 1,000,000 parts by weight of component (Ai) (3:56-4:10).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the silicone encapsulant composition of Stein in the solar cell module of Shiotsuka in order to allow for sufficient adhesion between the substrate (126) and the solar cell (121).

The claimed ranges of the second silicone resin and the ratio of the number of moles of silicon-bonded hydrogen to the total number of moles of silicon-bonded alkenyl groups in component (A) overlap or lies within the disclosed range. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists (MPEP § 2144.05, *In re Wertheim*). In an alternative, it would have been obvious to one of ordinary skill in the art at the time of the invention to have performed routine experimentation to determine the optimum weight fraction of the second silicone resin, and the ratio of the number of moles of silicon-bonded hydrogen to the total number of moles of silicon-bonded alkenyl groups in component (A) by routine experimentation such that the adhesivity of the silicone encapsulant composition is optimized. In the case where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation (MPEP § 2144.05 IIA, *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)).

Hence, Shiotsuka in view of Stein discloses that said first and second liquid diorganopolysiloxanes, silicone resins, cross-linking agents, and hydrosilylation catalysts may be the same or different from each other, respectively.

Regarding claim 14, Shiotsuka in view of Stein further discloses the first and second silicon resins contain up to 100 parts weight. Although the reference is silent as to whether said liquid silicone encapsulant composition comprises a resin fraction of between 30% and 50% by weight and said silicone adhesive composition comprises a resin fraction of between 20% and 30% by weight, it would have been obvious to one of

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ordinary skill in the art at the time of the invention to have performed routine experimentation to determine the optimum weight fraction of the second silicone resin such that the adhesivity of the silicone encapsulant composition is optimized. In the case where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation (MPEP § 2144.05 IIA, *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)).

Regarding claims 15-16, 32-33 and 38, the silicone adhesive/encapsulant composition of Shiotsuka in view of Stein as modified has the same composition as the instant claim, and therefore, the silicone encapsulant/adhesive composition of Shiotsuka in view of Stein as modified must inherently cure without releasing volatiles and exhibits a light transmission substantially equivalent to glass. If different results are achieved, it must be due to the limitations that are not currently claimed. It is also noted that claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable (*In re Best*, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977)) (MPEP §2112).

Regarding claims 8, 13, 17 and 34, Shiotsuka in view of Stein further discloses one or more solar cells (121) is pre-treated prior to adhesion to the silicone encapsulant/adhesive composition (since the photovoltaic string is already made and interposed between silicone encapsulant and silicone adhesive, it must be pre-made/treated), and the silicone encapsulant/adhesive composition additionally comprises one or more adhesive promoter(s) and/or an anti-soiling agent(s) and/or cure

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inhibitor (s) and/or a silane of the formula  $(R^1O)^3SiR^2$ , wherein  $R^1$  is an alkyl group comprising 1 to 6 carbon atoms,  $R^2$  is selected from the group of an alkoxy group comprising 1 to 6 carbon atoms, an alkyl group comprising 1 to 6 carbon atoms, an alkenyl group comprising 1 to 6 carbon atoms, an acrylic group or an alkyl acrylic group (1:58-67).

### ***Correspondence/Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GOLAM MOWLA whose telephone number is (571) 270-5268. The examiner can normally be reached on M-Th, 0800-1830 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ALEXA NECKEL can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/G. M./

Examiner, Art Unit 1795

/Alexa D. Neckel/

Supervisory Patent Examiner, Art Unit 1795